Listing of Claims

Claims 1-98 (canceled)

99. (previously presented) A stamper for molding an article, comprising:

a transfer surface for molding the article;

a heat insulating material extending in parallel to, but not contacting, said transfer surface; and

a metallic layer provided on a side of said heat insulating material opposite to a side facing said transfer surface.

100. (previously presented) A stamper as claimed in claim 99, wherein said heat insulating material has a thermal conductivity lower than 94 W/m.k.

101. (previously presented) A stamper as claimed in claim 99, wherein said heat insulating material comprises a heat resistance organic polymer.

102. (previously presented) A stamper as claimed in claim 101, wherein the heat resistant organic polymer comprises polyimide.

103. (previously presented) A stamper as claimed in claim 102, wherein the polyimide has a thickness between 5 μm and 150 μm.

104. (previously presented) A stamper as claimed in claim 101, wherein the heat

resistant organic polymer comprises polyamideimide.

105. (previously presented) A stamper as claimed in claim 104, wherein the polyamideimide has a thickness between 5 μm and 150 μm.

106. (previously presented) A stamper as claimed in claim 99, wherein said heat insulating material comprises a heat resistant inorganic polymer.

107. (previously presented) A stamper as claimed in claim 106, wherein the heat resistant inorganic polymer comprises a ceramic.

108. (previously presented) A stamper as claimed in claim 107, wherein the ceramic has a thickness between 50 μm and 300 μm.

109. (previously presented) A stamper as claimed in claim 99, wherein said heat insulating material comprises a metal.

110. (previously presented) A stamper as claimed in claim 109, wherein the metal is close in a coefficient of linear expansion to Ni (nickel) used as a stamper material.

111. (previously presented) A stamper as claimed in claim 109, wherein the metal comprises Bi (bismuth).

112. (previously presented) A stamper as claimed in claim 111, wherein the Bi has a thickness between 150 μm and 300 μm.

113. (previously presented) A method of producing a stamper for molding an article, comprising:

electroforming on a photoresist master having a transfer surface pattern an Ni layer having a transfer surface to which said transfer surface patter is transferred;

forming a heat insulating layer on said Ni layer;

forming a metallic layer on a side of said heat insulating layer opposite to a side facing said Ni layer; and

separating said photoresist master from said Ni layer.

114. (previously presented) A method as claimed in claim 113, further comprising the step of forming a second Ni layer on said heat insulating layer.

115. (previously presented) A method as claimed in claim 113, wherein said heat insulating material has a thermal conductivity lower than 94 W/m.k.

116. (previously presented) A method as claimed in claim 113, wherein said heat insulating material comprises a heat resistant organic polymer.

117. (previously presented) A method as claimed in claim 116, wherein the heat resistant organic polymer comprises polymide.

118. (previously presented) A method as claimed in claim 117, wherein the polymide has a thickness between 5 μm and 150 μm.

119. (previously presented) A method as claimed in claim 113, wherein the heat resistant organic polymer comprises polyamideimide.

120. (previously presented) A method as claimed in claim 119, wherein the polyamideimide has a thickness between 5 μm and 150 μm.

121. (previously presented) A method as claimed in claim 113, wherein said heat insulating material comprises a heat resistant inorganic polymer.

122 (previously presented) A method as claimed in claim 121, wherein the heat resistance inorganic polymer comprises a ceramic.

123. (previously presented) A method as claimed in claim 121, wherein the ceramic has a thickness between 50 μm and 300 μm.

124. (previously presented) A method as claimed in claim 113, wherein said heat insulating material comprises a metal.

125. (previously presented) A method as claimed in claim 124, wherein the metal is

close in a coefficient of linear expansion to Ni used as a stamper material.

126 (previously presented) A method as claimed in claim 124, wherein the metal comprises Bi.

127. (previously presented) A method as claimed in claim 126, wherein the Bi has a thickness between 150 μm and 300 μm.

128. (previously presented) A method of producing a stamper for molding an article, comprising:

electroforming on a mother stamper having an inverted transfer surface pattern an Ni layer having a transfer surface to which said inverted transfer surface patter is transferred;

forming a heat insulating layer on said Ni layer;

forming a metallic layer on a side of said heat insulating layer opposite to a side facing said Ni layer; and

separating said mother stamper from said Ni layer.

129. (previously presented) A method as claimed in claim 128, further comprising the step of forming a second Ni layer on said heat insulating layer.

130. (previously presented) A method as claimed in claim 128, wherein said heat insulating material has a thermal conductivity lower than 94 W/m.k.

131. (previously presented) A method as claimed in claim 128, wherein said heat insulating material comprises a heat resistant organic polymer.

132. (previously presented) A method as claimed in claim 131, wherein the heat resistant organic polymer comprises polymide.

133 (previously presented) A method as claimed in claim 132, wherein the polymide has a thickness between 5 μm and 150 μm.

134. (previously presented) A method as claimed in claim 128, wherein the heat resistant organic polymer comprises polyamideimide.

135. (previously presented) A method as claimed in claim 134, wherein the polyamideimide has a thickness between 5 μm and 150 μm.

136. (previously presented) A method as claimed in claim 128, wherein said heat insulating material comprises a heat resistant inorganic polymer.

137. (previously presented) A method as claimed in claim 136, wherein the heat resistance inorganic polymer comprises a ceramic.

138. (previously presented) A method as claimed in claim 137, wherein the ceramic has a thickness between 50 μm and 300 μm.

139 (previously presented) A method as claimed in claim 128, wherein said heat insulating material comprises a metal.

140. (previously presented) A method as claimed in claim 139, wherein the metal is close in a coefficient of linear expansion to Ni used as a stamper material.

141. (previously presented) A method as claimed in claim 139, wherein the metal comprises Bi.

142. (previously presented) A method as claimed in claim 141, wherein the Bi has a thickness between 150 μm and 300 μm.

143. (previously presented) A method of producing a stamper for molding an article, comprising:

forming photoresist on a glass master;

exposing said photresist with a laser and then developing said photoresist to thereby form a transfer surface patter of fine projection and recesses;

metallizing a surface of said phoresist formed with said transfer surface pattern and then electroforming a master transfer metal layer;

forming a master heat insulating layer on said master transfer metal layer;

forming a master metal layer on said master heat insulating layer on a side of said master heat insulating layer opposite to a side facing said transfer surface patter; and separating said glass master and then removing said photoresist.

144. (previously presented) A method as claimed in claim 143, wherein said master transfer metal layer and said master metal layer are formed on Ni.

145. (previously presented) A method as claimed in claim 144, wherein said master transfer metal layer is 100 µm to 25 µm thick.

146. (previously presented) A method as claimed in claim 144, wherein said master transfer metal layer is 25 µm to 5 µm thick.

147. (previously presented) A method as claimed in claim 143, wherein said master transfer metal layer is 100 µm to 25 µm thick.

148. (previously presented) A method as claimed in claim 143, wherein said master transfer metal layer is 25 µm to 5 µm thick.

149. (previously presented) A method of producing a stamper for molding a article, comprising:

producing a master by forming photoresist on a glass master, exposing said photoresist with a laser and then developing said photoresist to thereby form transfer surface pattern of fine projections and recess, metallizing a surface of said photoresist formed with said transfer surface pattern and then electroforming a master transfer metal layer, separating said glass master, and removing said photoresist;

producing a mother by executing peeling and film forming with said surface of said master formed with said patter and then electroforming a mother transfer metal electrode, said mother having an inverted transfer surface patter to which said transfer surface patter is transferred; and

producing a son stamper by executing peeling and film forming with said inverted transfer surface of said mother, sequentially forming a son transfer metal layer having a transfer surface to which said inverted transfer surface patter is transferred, a son heat insulating layer, and a son metal layer formed on a side of said son heat insulating layer opposite to a side facing said transfer surface, and separating said mother.

150. (previously presented) A method as claimed in claim 149, wherein said master transfer metal layer, said mother transfer metal layer, said son transfer metal layer, said master metal layer and said son metal layer are formed of Ni.

151. (previously presented) A method as claimed in claim 150, wherein said master transfer metal layer and said son transfer metal layer each are 100 μm to 25 μm thick.

152. (previously presented) A method as claimed in claim 150, wherein said master transfer metal layer and said son transfer metal layer each are 25 μm to 5 μm thick.

153. (previously presented) A method as claimed in claim 149, wherein said master transfer metal layer and said son transfer metal layer each are 100 μm to 25 μm thick.

154. (previously presented) A method as claimed in claim 149, wherein said master transfer metal layer and said son transfer metal layer are 25 μm to 5 μm thick.